

**CLAIMS**

1. Device for measuring at least one item of physiological information in an individual, characterised in that it comprises a flexible membrane, designed to come into contact with the skin of the said individual and participating in the definition of a deformable space for a flexible substance, the said substance transmitting to at least one sensor at least one physical force undergone by the said membrane, the said deformable space being defined by a support on which the said sensors and the said membrane are mounted, so that the said substance is in direct contact with the said sensor or sensors.
2. Device according to claim 1, characterised in that the said membrane comprises means of fixing to the said support.
3. Device according to claim 2, characterised in that the said membrane defines at least one housing designed to receive the said support.
4. Device according to any one of claims 1 to 3, characterised in that the said membrane comprises means of fixing to a shell element of the said device.
5. Device according to claim 4, characterised in that the said membrane defines at least one housing designed to receive the said shell element.
6. Device according to any one of claims 3 to 6, characterised in that the said fixing means act by clipping.

7. Device according to any one of claims 1 to 6, characterised in that the said membrane has at least two areas with different rigidities.

8. Device according to claim 7, characterised in that the said membrane has a main contact area, designed to come in contact with the skin of the said individual, and a peripheral area, extending over the contour of the said main contact area.

9 Device according to either one of claims 7 and 8, characterised in that each of the said areas fulfils a distinct function, belonging to the group comprising the measurement of forces, the transmission of forces and the rigidity of the shape of the said membrane.

10. Device according to any one of claims 7 to 9, characterised in that the thickness of the said peripheral area is less than the thickness of the said main contact area.

11 Device according to any one of claims 7 to 10, characterised in that the said membrane is obtained by overmoulding at least two materials with different rigidities.

12. Device according to any one of claims 1 to 11, characterised in that the said membrane is produced from at least one hypoallergenic material.

13. Device according to any one of claims 1 to 12, characterised in that the said membrane and/or the said substance has an elastic character.

14. Device according to any one of claims 1 to 13, characterised in that the said substance is a non-compressible or only slightly compressible material.

15. Device according to any one of claims 1 to 14, characterised in that the said substance is a dielectric material.

16. Device according to any one of claims 1 to 15, characterised in that the said substance is a silicone gel.

17. Device according to any one of claims 1 to 16, characterised in that it comprises at least one transducer for measuring at least one dynamic force, representing an arterial pressure wave and/or a relative movement.

18. Device according to any one of claims 1 to 17, characterised in that it comprises at least one transducer for measuring at least one static force.

19. Device according to any one of claims 1 to 18, characterised in that it comprises a sensor for the temperature of the said substance, representing the skin temperature of the user.

20. Device according to any one of claims 1 to 19, characterised in that the said sensor or sensors comprise at least piezocapacitive sensor and/or at least one piezoresistive sensor and/or at least contact switching at a predetermined pressure.

21. Device according to any one of claims 1 to 20, characterised in that the said support is a printed circuit carrying electronic components for effecting the amplification, treatment and processing of electrical signals and/or a decision relating to a state of the said wearer, means for supplying electrical energy and/or a communication interface.

22. Device according to any one of claims 1 to 21, characterised in that comprises a shell formed from two complementary shell elements, a bottom shell element carrying the said membrane and a top shell element.

23. Device according to claim 22, characterised in that the said shell elements are connected together by screwing and/or clipping and/or adhesive bonding, also providing a seal for the said fluid.

24. Device according to either one of claims 22 and 23, characterised in that it comprises a holding strap, fixed to the top shell element.

25. Device according to claim 24, characterised in that the said holding strap and/or the said top shell element has a capacity for extensibility and elastic recovery so as to facilitate the application of a prestressing to the said device.

26. Device according to claim 25, characterised in that the said holding strap and at least a portion of the said shell form a single piece produced from a flexible material.

27. Device according to any one of claims 1 to 26, characterised in that it comprises processing means analysing at least one physical force transmitted by the said fluid in order to determine at least one of the items of information, belonging to the group comprising:

- at least one item of blood pressure information;
- at least one item of information representing the pulse;
- at least one item of information representing arterial tension;
- at least one item of information representing respiration;
- at least one item of information representing the activity of the said individual;
- at least one item of information representing a fall;
- at least one item of information representing the wave form;
- at least one item of information representing the skin temperature of the wearing area;
- at least one item of information as to whether the device is worn/not worn;
- at least one item of information representing the change/or variance of one of the said above items of information.

28. Sensor module for a device according to any one of claims 1 to 27, characterised in that it comprises a flexible membrane designed to come into contact with the skin of the said individual and participating in the definition of a deformable space for a flexible substance, the said substance transmitting to at least one sensor at least one physical force undergone by the said membrane.

29. Method of manufacturing a device for measuring at least one item of physiological information according to any one of claims 1 to 27, characterised in that it comprises the following steps:

- mounting the necessary electronic components on a support;
- connecting together the said membrane and the said support, defining a deformable space;
- injecting the said substance in the said space.

30. Method according to claim 29, characterised in that the said substance is injected into the said space in a liquid form.

31. Method according to either one of claims 29 and 30, characterised in that the said support is inserted in at least one housing defined in the said membrane.

32. Method according to any one of claims 29 to 31, characterised in that the said membrane is fixed to a

bottom shell element, by means of at least one housing provided for this purpose on the said membrane.

33. Method according to any one of claims 29 to 32, characterised in that it comprises a step of assembling a shell formed from a bottom shell element and a top shell element.

34. Method according to claim 33, characterised in that the said shell elements are connected together by screwing and/or clipping and/or adhesive bonding.